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☐ 1. Document ID: US 6262149 B1

L3: Entry 1 of 13

File: USPT

Jul 17, 2001

US-PAT-NO: 6262149

DOCUMENT-IDENTIFIER: US 6262149 B1

TITLE: Acrylic modified waterborne sulfonated alkyd dispersions

DATE-ISSUED: July 17, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Clark; Mark D.	Kingsport	TN		
Kuo; Thauming	Kingsport	TN		
Stockl; Rebecca R.	Kingsport	TN		
Shields; Glen D.	Kingsport	TN		

US-CL-CURRENT: 523/501; 524/457, 524/539, 524/603, 524/609, 524/845, 524/846, 525/7, 525/7.1

## ABSTRACT:

A water-based latex of an acrylic-modified waterborne alkyd dispersion in water is described. The acrylic-modified waterborne alkyd is a hybrid resin prepared by the polymerization of at least one ethylenically unsaturated monomer in the presence of a waterborne alkyd having at least one pendant sulfonate functionality. The ethylenically unsaturated monomer may also be a latent oxidatively functional (LOF) acrylic monomer. Preparation of the latexes may be achieved by emulsion polymerization of at least one ethylenically unsaturated monomer in the presence of a waterborne alkyd having at least one pendant sulfonate functionality. Preparation of hybrid latexes which contain latent oxidative functional (LOF) acrylic monomers may also be achieved by emulsion polymerization of at least one LOF acrylic monomer in the presence of a waterborne alkyd having at least one pendant sulfonate functionality whereby the latent oxidative functionality of the acrylic polymer survives polymerization. Such acrylic-modified waterborne alkyds are useful in a variety of coating compositions.

19 Claims, 0 Drawing figures

Exemplary Claim Number: 7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC
Draw	Desc	Image									

☐ 2. Document ID: US 6114439 A

L3: Entry 2 of 13

File: USPT

Sep 5, 2000

US-PAT-NO: 6114439

DOCUMENT-IDENTIFIER: US 6114439 A

TITLE: Crosslinkable aqueous polyester emulsion and process for preparing the same

DATE-ISSUED: September 5, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hwu; Herng-Dar	Hsinchu			TWX
Chang; Yih-Her	Hsinchu			TWX
Song; Tsing-Tang	Yilan Hsien			TWX
Tseng; Tsai-Wie	Hsinchu			TWX

US-CL-CURRENT: 524/845; 523/206, 524/513, 524/603

ABSTRACT:

A crosslinkable aqueous polyester-containing emulsion and a process for preparing the same. The emulsion is obtained by polymerizing unsaturated monomers of acrylic, using a crosslinkable, sulfonated polyester emulsifier having an acid number less than 80 mg KOH/g and an intrinsic viscosity greater than 0.1 dl/g as an emulsifier. The emulsion has the chemical characteristics of both polyester and acrylic resin, i.e. has low volatile organic compounds, good mechanical stability, and good storage stability. Since the emulsion is crosslinkable, a film formed by the emulsion has excellent adhesion, water and heat resistance. Thus, the emulsion is useful for coating and printing on Nylon, PET, OPP films, as well as for high performance industrial surface coating and adhesion for which good heat-, water-, and weather-resistance are required.

9 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RWMC
Draw Desc	Image										

☐ 3. Document ID: US 6020420 A

L3: Entry 3 of 13

File: USPT

Feb 1, 2000

US-PAT-NO: 6020420

DOCUMENT-IDENTIFIER: US 6020420 A

TITLE: Water-dispersible polyesters

DATE-ISSUED: February 1, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
George; Scott Ellery	Kingsport	TN		

US-CL-CURRENT: 524/609; 524/601, 524/604, 524/605, 524/612, 528/272, 528/295, 528/298, 528/300, 528/301, 528/302, 528/306, 528/307, 528/308, 528/308.6

ABSTRACT:

This invention provides crystalline, water-dispersible polyesters comprising residues of 4,4'-biphenyl dicarboxylic acid. The polyesters comprise residues of 4,4'-biphenyl dicarboxylic acid, at least one difunctional sulfomonomer in an amount sufficient to provide water dispersibility to the polyester, and a glycol or a mixture of glycols. The polyesters of the invention are useful in ink and adhesive compositions.

14 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWIC

☐ 4. Document ID: US 5530059 A

L3: Entry 4 of 13

File: USPT

Jun 25, 1996

US-PAT-NO: 5530059

DOCUMENT-IDENTIFIER: US 5530059 A

TITLE: Water-dissipatable alkyd resins and coatings prepared therefrom

DATE-ISSUED: June 25, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Blount, Jr.; William W.	Kingsport	TN	37660	
Kuo; Thauming	Kingsport	TN	37664	

US-CL-CURRENT: 524/604; 524/601, 524/605, 524/609, 524/755, 524/764, 524/765, 524/788, 524/847, 525/437, 525/438, 525/441, 525/445, 528/272, 528/290, 528/295, 528/295.5, 528/302, 528/308, 528/308.6

ABSTRACT:

Disclosed is a water-dissipatable alkyd resin containing a sulfonate group. The alkyd resin is prepared by reacting at least one monoglyceride, a polycarboxylic acid, and a polyol sulfomonomer adduct containing at least one sulfonate group. The alkyd resin is useful to prepare cross-linked coatings such as obtained with oil based paints.

4 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWIC

☐ 5. Document ID: US 5378757 A

L3: Entry 5 of 13

File: USPT

Jan 3, 1995

US-PAT-NO: 5378757

DOCUMENT-IDENTIFIER: US 5378757 A

TITLE: Water-dissipatable alkyd resins and coatings prepared therefrom

DATE-ISSUED: January 3, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Blount, Jr.; William W.	Kingsport	TN		
Kuo; Thauming	Kingsport	TN		

US-CL-CURRENT: 524/608; 524/601, 524/603, 524/604, 524/605, 524/609, 525/437, 525/438, 525/440, 525/444, 528/272, 528/275, 528/293, 528/295, 528/295.5, 528/296, 528/298, 528/300, 528/301, 528/302, 528/306, 528/308, 528/308.6

ABSTRACT:

Disclosed is a water-dissipatable alkyd resin containing a sulfonate group. The alkyd resin is prepared by reacting at least one monoglyceride, a polycarboxylic acid, and a polyol sulfomonomer adduct containing at least one sulfonate group. The alkyd resin is useful to prepare cross-linked coatings such as obtained with oil based paints.

19 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 6. Document ID: US 5369211 A

L3: Entry 6 of 13

File: USPT

Nov 29, 1994

US-PAT-NO: 5369211  
DOCUMENT-IDENTIFIER: US 5369211 A

TITLE: Water-dispersible sulfo-polyester compositions having a TG of greater than 89.degree.C.

DATE-ISSUED: November 29, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
George; Scott E.	Kingsport	TN		
Jordan; Donna L.	Kingsport	TN		
Sublett; Bobby J.	Kingsport	TN		

US-CL-CURRENT: 528/293; 524/706, 524/711, 524/773, 524/777, 524/787, 528/272, 528/275, 528/286, 528/295, 528/298, 528/302, 528/307, 528/308

ABSTRACT:

The present invention relates to sulfonate containing water-dispersible or water-dissipatable sulfo-polyester compositions. The sulfo-polyesters of the present invention have a glass transition temperature of greater than 89.degree. C. In addition, the sulfo-polyesters have a dicarboxylic acid component of poly(ethylene-2,6-naphthalene dicarboxylate and a sulfo-monomer, and a diol component of at least 35 mole percent of a diol selected from ethylene glycol, 1,4-cyclohexanedimethanol, propane-1,2-diol and 2,2-dimethyl-1,3-propanediol. The sulfo-polyesters of this invention are useful in applications where increased abrasion resistance, inherent higher temperature process conditions, and improved blocking resistance are required such as in adhesives, coating materials, sizes, laminated products, aqueous printing inks, and films.

7 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 7. Document ID: US 5349010 A

L3: Entry 7 of 13

File: USPT

Sep 20, 1994

US-PAT-NO: 5349010  
DOCUMENT-IDENTIFIER: US 5349010 A

TITLE: Water-dispersible polyester resins and process for their preparation

DATE-ISSUED: September 20, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kuo; Thauming	Kingsport	TN		

US-CL-CURRENT: 524/600; 528/285

ABSTRACT:

Disclosed is a water-dissipatable or dispersible polyester containing sulfonate groups that has improved stability prepared from a monocarboxylic acid sulfomonomer. This polyester can be prepared in a one or two step process but the preferred two step process entails polymerizing the reactants wherein the monocarboxylic acid sulfomonomer has been pre-reacted with a monofunctional reactant containing at least three hydroxyl groups to form a diol adduct.

25 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw	Desc	Image								

☐ 8. Document ID: US 5344872 A

L3: Entry 8 of 13

File: USPT

Sep 6, 1994

US-PAT-NO: 5344872  
DOCUMENT-IDENTIFIER: US 5344872 A

TITLE: Ink compositions containing certain methacrylates

DATE-ISSUED: September 6, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Debord; Theo J.	Kingsport	TN		
Escano; Nelson Z.	Kingsport	TN		
Wilkin; Louis A.	Kingsport	TN		

US-CL-CURRENT: 524/513; 524/514, 525/165, 525/166, 525/167, 525/35, 525/437, 525/441, 525/443, 525/444, 525/448, 525/450, 528/272, 528/290, 528/291, 528/292, 528/293, 528/302, 528/305, 528/307

ABSTRACT:

This invention relates to an aqueous dispersion of a water-dissipatable polyester and a styrenated acrylic copolymer in combination with either an acrylic polymer or a hydantoin-formaldehyde resin.

44 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC

☐ 9. Document ID: US 5322885 A

L3: Entry 9 of 13

File: USPT

Jun 21, 1994

US-PAT-NO: 5322885

DOCUMENT-IDENTIFIER: US 5322885 A

TITLE: Aqueous dispersion compositions and coatings prepared therefrom

DATE-ISSUED: June 21, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kuo; Thauming	Kingsport	TN		

US-CL-CURRENT: 524/603; 523/501, 524/425, 524/430, 524/451, 524/601, 524/845, 528/279, 528/293, 528/294, 528/295

ABSTRACT:

Disclosed is pigmented dispersion containing a non-amine wetting and dispersing agent and a water-dissipatable or dispersible polyester containing sulfonate groups that has improved stability having a substantial number of capped carboxyl groups attached to the sulfomonomer moieties. This polyester can be prepared by capping the carboxyl end groups of the polyester with oxirane compounds or by polymerizing the reactants wherein one reactant is a diol that is a diester adduct of a glycol and a dicarboxylic acid sulfomonomer.

20 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC

☐ 10. Document ID: US 5294650 A

L3: Entry 10 of 13

File: USPT

Mar 15, 1994

US-PAT-NO: 5294650

DOCUMENT-IDENTIFIER: US 5294650 A

TITLE: Process for preparing sulfo-polyester/acrylic resin blends without volatile organic compounds

DATE-ISSUED: March 15, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sharma; Mahendra K.	Kingsport	TN		

US-CL-CURRENT: 523/523; 523/501, 524/388, 524/513, 528/167, 528/173, 528/174, 528/176

ABSTRACT:

This invention relates to a process for preparing aqueous blends of sulfo-polyesters and solid acrylic resins without volatile organic compounds (VOC's) and surfactants. More specifically, the acrylic resins are characterized by an inverse relationship between the molecular weight and acid number of the resin, and the sulfo-polyesters contain at least 12 mole percent of a difunctional sulfomonomer. The aqueous sulfo-polyester/acrylic resin blends of the present invention are useful in inks, overprint varnishes, primers, paints, and coatings.

19 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
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☐ 11. Document ID: US 5218042 A

L3: Entry 11 of 13

File: USPT

Jun 8, 1993

US-PAT-NO: 5218042  
DOCUMENT-IDENTIFIER: US 5218042 A

TITLE: Water-dispersible polyester resins and process for their preparation

DATE-ISSUED: June 8, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kuo; Thauming	Kingsport	TN	37664	
Moody; Keith M.	Kingsport	TN	37663	

US-CL-CURRENT: 524/601; 524/602, 524/603, 524/604, 524/605, 528/279, 528/283, 528/293, 528/295

ABSTRACT:

Disclosed is a water-dissipatable or dispersible polyester containing sulfonate groups that has improved stability having a substantial number of capped carboxyl groups attached to the sulfomonomer moieties. This polyester can be prepared by capping the carboxyl end groups of the polyester with oxirane compounds or by polymerizing the reactants wherein one reactant is a diol that is a diester adduct of a glycol and a dicarboxylic acid sulfomonomer.

34 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

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☐ 12. Document ID: WO 9505413 A1

L3: Entry 12 of 13

File: EPAB

Feb 23, 1995

PUB-NO: WO009505413A1  
DOCUMENT-IDENTIFIER: WO 9505413 A1

TITLE: WATER-DISPERSIBLE ACRYLIC-MODIFIED POLYESTER RESINS USED IN COATINGS AND PROCESS FOR THEIR PREPARATION

PUBN-DATE: February 23, 1995

INVENTOR-INFORMATION:

NAME  
KUO, THAUMING

COUNTRY

INT-CL (IPC): C08 G 63/688; C09 D 167/06  
EUR-CL (EPC): C08G063/688; C08G069/44, C09D167/06

ABSTRACT:

Disclosed is a water-dispersible acrylic-modified polyester resin containing sulfonate groups prepared by addition copolymerization of ethylenically unsaturated vinyl monomers and a polyester. The polyester is prepared from a polycondensation reaction with dicarboxylic acids, glycols, ethylenically unsaturated monomer, and a minor amount of a sulfomonomer. The acrylic-modified polyester is prepared by first producing the polyester under polycondensation conditions followed by the addition polymerization of the ethylenically unsaturated vinyl monomers. The acrylic-modified polyesters can be formed into a coating composition that has zero or very little organic solvent and is very useful to produce crosslinked cured enamels having excellent gloss, hardness, impact resistance, and water resistance such as those used in automotive finishes, appliance, and coil coatings.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMJC
Draw Desc	Image									

☐ 13. Document ID: WO 200100703 A1

L3: Entry 13 of 13

File: DWPI

Jan 4, 2001

DERWENT-ACC-NO: 2001-191255  
DERWENT-WEEK: 200119  
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TITLE: Resin intermediate, useful for the production of aqueous coating compositions, comprises the reaction product of a glycol and a difunctional sulfo-monomer

INVENTOR: KUO, T; POWELL, J E G

PRIORITY-DATA: 1999US-140998P (June 29, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 200100703 A1	January 4, 2001	E	024	C08G063/688

INT-CL (IPC): C08 G 63/20; C08 G 63/688; C08 G 63/78; C09 D 167/00

ABSTRACTED-PUB-NO: WO 200100703A  
BASIC-ABSTRACT:

NOVELTY - A resin intermediate (I) comprises the reaction product of (A) a glycol component and (B) a difunctional sulfomonomer. (I) is substantially free of particles of (B).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(i) a process for the production of (I) by forming a slurry of (A), (B) and water and reacting to form (I);

(ii) a hydroxyl-functional, water dispersible polyester (II) comprising 8-16 mol% of (I) (comprising 75-85 mol% (A) and 15-25 mol% (B)), 35-55 mol% of a polyol and 30-50 mol% of a diacid.



(iii) a zero VOC, ambient-cure, organic-solvent-free dispersion (III) comprising 45-70 wt.% water and 30-55 wt.% of a resin composition (comprising 50-90 wt.% (II) and 10-50 wt.% of a cross-linking agent); and

(iv) an article coated with the dispersion (III).

USE - The resin intermediate (I) is useful for the production of aqueous, ambient cure coating compositions.

ADVANTAGE - Coatings prepared from (I) have good transparency and water resistance and have a low odor.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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Term	Documents
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RESIN.DWPI,EPAB,JPAB,USPT.	1449214
RESINS.DWPI,EPAB,JPAB,USPT.	287010
((SULFOMONOMER SAME RESIN) AND 2).USPT,JPAB,EPAB,DWPI.	13
(L2 AND (SULFOMONOMER SAME RESIN)).USPT,JPAB,EPAB,DWPI.	13

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